

TEC DEVELOPMENT INTERNATIONAL

PRESENTATION TO:

UNITED STATES ARMY CORPS OF ENGINEERS

**THE WAUKEGAN ENVIRONMENTAL SOIL AND WATER REMEDIATION
CENTER**

NOVEMBER 4, 2003



**CENTER FOR THE ENVIRONMENTAL REMEDIATION OF THE
CONTAMINATED SOIL AND WATER OF THE WAUKEGAN, IL REGION**

OUTBOARD MARINE CORPORATION (OMC) NORTH PLANT

- OMC occupied over 45 Lake Michigan Lake Front acres and contained multiple buildings dedicated to machine manufacturing.
- The OMC North Plant contains in excess of 1.8 Million square feet, is one of the remaining OMC structures, and is comprised of multiple attached, largely abandoned buildings.
- Due to its contaminated state and the planned lakefront redevelopment, reutilization of this facility is limited.
- The North Plant and its immediate reutilization would be a massive catalyst toward the redevelopment and revitalization of Waukegan, IL.
- The City of Waukegan is in final negotiations for the purchase of the OMC North plant.
- The recommended solution is to maximize the location and benefits of the OMC North Plant and to reutilize it as the:

WAUKEGAN ENVIRONMENTAL SOIL AND WATER REMEDIATION CENTER

The OMC North Plant-Waukegan Environmental Soil and Water Remediation Center would be:

1. Perfectly located in the epicenter of the Waukegan remediation area.
2. Easily accessible, via local roads and highways.
3. Totally enclosed, rendering it as the ideal facility, which is out of the public view and could efficiently contain odor and noise.
4. Of necessary size to handle large volumes of material.

The planned environmental remediation activity, to be carried out in the OMC North Plant-Waukegan Environmental Soil and Water Remediation Center includes:

1. Biological treatment and reuse of contaminated soil and water.
2. Chemical/Physical, Treatment of contaminated materials.
3. Aerobic and anaerobic decomposition of waste materials.
4. Sludge treatment.
5. BioGas energy recovery.
6. Contaminated Soil Material and water collection and transport center.

The proposed immediate and primary environmental remediation technology to be carried out in the OMC North Plant will be Mechanical Soil Washing using the TERRALAVAR (TM) Soil Washing Process. Professional services for the operation of the Mechanical Soil Washing Plant are to be provided by BSI Environmental.

THE OMC NORTH PLANT-WAUKEGAN ENVIRONMENTAL SOIL AND WATER REMEDIATION CENTER'S, IMMEDIATE POTENTIAL ENVIRONMENTAL REMEDIATION PROJECTS, COULD INCLUDE THE WAUKEGAN HARBOR DREDGING PROJECT.

**THE WAUKEGAN ENVIRONMENTAL SOIL AND WATER REMEDIATION
CENTER'S CONTRIBUTION TO
THE WAUKEGAN HARBOR DREDGING PROJECT**

**BSI TECHNOLOGY
TERRALAVAR**

TERRALAVAR is a soil washing process for the chemical-physical remediation of soils and soil like materials that are contaminated with organic and/or inorganic harmful substances, such as mineral and tar oil, PAH, PCB, TNT and heavy metals. The process is based on shifting the contaminants to the ultra-fine particles in the soil while making use of kinetic energy and water. The ultra-fine particles containing contaminants are discharged from the system as filter cake. The contaminated soil is then available as backfill or as high-quality construction material. If augmented with the BSI's **TERRAFIRM** and **TERRATHERM** processes, **TERRALAVAR** covers the entire spectrum of contaminants.

BSI's preliminary analysis indicate that its proprietary soil washing technology, **TERRALAVAR**, can reduce the concentrations of total Polychlorinated Biphenyls (PCBs) in the sediments of the Waukegan Harbor to levels below 10.0 mg/kg.

TERRALAVAR soil washing can significantly reduce the concentrations of total PCBs and reduce toxicity provided contaminated sediments treated are similar to those tested in previous studies. Soil washing technology will only be feasible for the higher concentration materials.

ESTIMATED SOIL REMEDIATION PROJECT COSTS

Assumptions:

The following projected cost estimates assume the remediation work will:

- Be performed onsite.
- Utilize specialized mobile plant technology.

The following projected cost estimates do not include:

- Excavation/Dredging
- Trucking to landfill
- Placement in landfill

BSI believes that the Waukegan Harbor Sediments, are suitable for soil washing. BSI estimates that the cost related to the implementation of a treatment train that includes mechanical water washing using the **TERRALAVAR** – Sediment Washing process is estimated to be approximately \$31 per cubic yard when processing 100,000 cubic yards of material.

RECOMMENDATIONS

BSI recommends proceeding with the implementation of the **TERRALAVAR** Technology Solution on the Waukegan Harbor dredging Project. The recommended plant could be self-contained and be situated adjacent to the Waukegan Harbor or within the OMC North Plant. Dredging should be conducted during the spring, summer and fall in order to avoid the winter icing conditions.

* Composting to
treat PCBs.

- treats to 1.0 ppm
- use as compost/landscaping
- doubles vol.

- yard waste + nitrogen sources
added to sed's.

BSI VALUE PROPOSITION

- BSI Environmental is an independent US corporation with common ties to the Umweltschutz Nord Group (UN), one of the Worlds Premier Environmental Remediation organizations.
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- BSI shares technology, equipment and resources with the global UN Global network.
- BSI is able to utilize resources such as research and development, analytical testing, treatability testing and specialized engineering.
- The UN-BSI relationship also allows BSI to offer cutting edge technology from a global marketplace to our clients at economical costs.
- BSI represents UN in the US market.
- BSI's US headquarters, are located in Pace, Florida.
- BSI is housed in the TEC Development International Accelerator, the former OMC Environmental Building, which is in the center of the Waukegan Harbor.
- BSI has extensive successful experience in environmental remediation projects, similar in nature to the Waukegan Harbor, including the environmental remediation of the Port of Bremen, Germany.
- BSI was responsible for the environmental remediation of many US Military bases upon US Military departure from Germany.
- BSI was responsible for the environmental remediation of the Kuwaiti Oil Fields after Sadam Hussein set the oil fields on fire during the Gulf War.
- BSI has on site management and staff to directly oversee and manage the Waukegan Harbor Remediation.
- BSI is a member of the Waukegan economic community, employing not only internal staff but providing opportunities to multiple companies and sub contractors.
- BSI is a critical member of the OMC North Plant Redevelopment Project whose mission is to rehabilitate the plant and convert it into the epicenter for the environmental remediation of the contaminated soil and water of the Waukegan region.
- **BSI guarantees its technology and products.**
- **BSI guarantees its time schedules.**
- **BSI guarantees its contracted costs.**

BSI Soil Washing Experience

- Over 15 years of operational soil washing
- Operating 7 fixed soil-washing centers with capacities of up to 100,000 tons per year
- 3 mobile soil-washing units for on-site treatment.
- Successfully treated more than 3.5 Million tons of contaminated soils (1994-2002)\

BSI's Projects under the direction of the United States Army Corps of Engineers include:

- **Umatilla Depot Activity, Umatilla, Oregon** – BSI applied on-site stabilization, solidification, bioremediation and composting technologies to treat soils contaminated with lead, heavy metals, small arms ammunition and explosives.
- **Badger Army Ammunition Plant, Baraboo, WI** - BSI applied Chemical Treatment, Alkaline Hydrolysis and Acid Neutralization technologies to treat “off spec” materials contaminated with Nitrocellulose Fines
- **Massachusetts Military Reservation, Cape Cod, Massachusetts and Newport Chemical Depot, Newport, IN** - BSI applied bioremediation and composting technologies to treat soils contaminated with explosives.
- **Germany** - The environmental remediation of multiple United States military bases in Germany

Other examples of pertinent experience:

- **Germany** - A major current project under BSI's direction is the remediation and redevelopment of the Port of Bremen.
- **Kuwait** - The remediation of the oil fields in Kuwait after the Gulf War